

RFM Customer Segmentation Analysis

Prepared By: Soubarno Bhattacharya
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Tools Used: Power BI, Excel, Python (optional)

1. Executive Summary

This report presents a comprehensive RFM (Recency, Frequency, Monetary) customer segmentation analysis conducted using Power BI. The objective of this project is to understand customer purchasing behavior, identify high-value segments, and offer data-driven marketing strategies. Through cleaning and transforming transactional data, followed by the application of RFM scoring, we developed interactive Power BI dashboards that deliver actionable business insights.

2. Dataset Overview

Feature	Description
Rows	100,000+ transactional records
Time Frame	January 2010 to December 2011
Key Fields	InvoiceNo, CustomerID, InvoiceDate, Quantity, UnitPrice
Derived Fields	TotalPrice (Quantity * UnitPrice), RFM metrics
Data Cleaning	Removed null CustomerID, filtered out cancelled invoices (those starting with 'C')

3. RFM Metric Explanation

Metric	Definition	Calculation
Recency	Days since the customer's last purchase	Max InvoiceDate - Customer's most recent InvoiceDate
Frequency	Total number of transactions	Count of unique InvoiceNo per customer
Monetary	Total amount spent	Sum of TotalPrice per customer

These metrics help evaluate customer value based on recent engagement, purchase frequency, and contribution to revenue.

4. RFM Scoring

Each RFM metric is scored on a scale of 1 (lowest) to 5 (highest). Customers are grouped into quintiles:

- **Recency:** Lower = Better (more recent = higher score)
- **Frequency:** Higher = Better (more transactions = higher score)
- **Monetary:** Higher = Better (more spending = higher score)

Combined, this creates an RFM Score (e.g., 555 is a perfect score).

5. Customer Segmentation

Segment	RFM Pattern	Business Meaning
Best Customers	4-5 Recency, 4-5 Frequency, 4-5 Monetary	High spenders, frequent buyers, recent activity
Loyal Customers	Frequency 4-5	Repeat customers
At Risk	Recency 1-2	Haven't purchased recently
Hibernating	Recency 1-2, Frequency 1-2	Inactive and low-value
New Customers	Recency 5, Frequency 1	Just started buying

6. Power BI Dashboards & Insights

The following visuals were created in Power BI:

- **RFM Distribution Charts:** Histograms for Recency, Frequency, and Monetary
- **Customer Segmentation Pie Chart:** Segment-wise distribution
- **Revenue Contribution by Segment:** Bar chart showing % revenue per segment
- **Customer Recency Trend:** Line chart tracking recency behavior over time

Key Insights: - Best Customers contribute over 50% of total revenue - At Risk and Hibernating segments show long gaps in purchasing - Loyal Customers show consistent behavior — ideal for cross-selling

7. Business Recommendations

Segment	Strategy
Best Customers	Offer VIP programs, early access to sales
Loyal Customers	Promote premium products, offer loyalty bonuses

Segment	Strategy
At Risk	Send re-engagement emails, provide time-limited offers
Hibernating	Run win-back campaigns or exit surveys
New Customers	Offer welcome discounts, onboarding guides

8. Appendix (Optional)

- RFM DAX formulas in Power BI
- Data Cleaning Steps using Power Query
- RFM Score Binning Logic

End of Report